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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/386,052	08/30/1999	YASUO OKUTANI	1232-4563	9961

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EXAMINER

ARMSTRONG, ANGELA A

ART UNIT	PAPER NUMBER
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2654

DATE MAILED: 12/18/2002

17

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/386,052

Applicant(s)

OKUTANI ET AL.

Examiner

Angela A. Armstrong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6,8-17 and 19-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6,8-17 and 19-24 is/are allowed.
- 6) ☒ Claim(s) 25-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In response to the Office Action mailed June 6, 2002, applicant has filed Amendment D, amending claims 25-27 and adding claims 28-32.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 28-32 are rejected under 35 U.S.C. 102(a) as being anticipated by Campbell et al. (GB 2,313,530), hereinafter referred to as Campbell.

Regarding claims 28, 30 and 32, Campbell discloses a speech synthesizer which implements generating feature vectors or feature parameters for respective phonemes in which acoustic feature vectors, phoneme label and start time of phonemes within a speech waveform database, speech fundamental frequency, phoneme durations and a power value are stored as essential information at Figure 1, element 30; page 15, lines 21-26, which reads on “storing plural items of phoneme data.”

Additionally, Campbell teaches selection of feature parameters at page 25, line 10 continuing to page 26, line 17, which reads on “retrieving phoneme data having identical phoneme environments and fundamental frequencies from the plural items of phoneme data stored.”

Campbell also teaches a weighting coefficient process for assigning a weighting coefficient vector to target phonemes based on degrees of contribution (page 38, line 9 continuing to page 40, line 21), which reads on “assigning a penalty so as to raise the possibility that phoneme data whose value of a predetermined attribute is close to an average value of the predetermined attribute.”

Campbell implements a speech unit selector that generates index information based on feature vectors and weight vectors of the phonemes that is output to the speech synthesizer at Figure 1, element 12 and page 40, line 22 continuing to page 43, line 21, which reads on “selecting phoneme data to be employed in synthesis of a speech waveform.”

Regarding claims 29 and 31, additionally, Campbell implements a selector which searches for a combination of phoneme candidates which correspond to a phoneme sequence of an input sequence (Abstract), wherein the system searches for a combination of phoneme candidates that minimize the cost including a target cost representing approximate costs between target phonemes and phoneme candidates (page 12, lines 3-10) and selects samples closet to desired speech through processing performed given sets of phoneme labels, fundamental frequency and/or duration, which reads on “assigns a penalty in such a manner that a small penalty is assigned to a phoneme data whose value of the predetermined attribute is close to the average value, and a large penalty is assigned to a phoneme data whose value of the predetermined attribute is far from the average”.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Campbell et al. (GB 2,313,530), hereinafter referred to as Campbell, in view of Moebius et al (US Patent No. 5,751,907).

Regarding claims 25-27, Campbell discloses a speech synthesizer which implements generating feature vectors or feature parameters for respective phonemes in which acoustic feature vectors, phoneme label and start time of phonemes within a speech waveform database, speech fundamental frequency, phoneme durations and a power value are stored as essential information at Figure 1, element 30; page 15, lines 21-26, which reads on “storage means for storing plural items of phoneme data, wherein each item of phoneme data includes an attribute value for phoneme environment, phoneme boundary and fundamental frequency, power and phoneme duration.”

Additionally, Campbell teaches selection of feature parameters at page 25, line 10 continuing to page 26, line 17, which reads on “retrieving phoneme data having identical phoneme environments and fundamental frequencies from the plural items of phoneme data stored.”

Campbell also teaches a weighting coefficient process for assigning a weighting coefficient vector to target phonemes based on degrees of contribution (page 38, line 9 continuing to page 40, line 21), which reads on “assigning a penalty that is based on an attribute value.”

Campbell et al. do not specifically teach penalty assigning which sorts retrieved phoneme data based upon a prescribed attribute value and assigns a penalty value on the basis of the sorting order. In a similar field of endeavor, Moebius et al discloses a speech synthesizer having an acoustic element database, which concatenates the acoustic elements having common junction phonemes such that perceptible discontinuities at the junction phonemes are minimized (abstract). The method for selecting a phonetic sequence used for forming the acoustic elements used in the concatenation is accomplished by assigning a value to each of the phonetic sequences based on a particular quality measure to rank the sequences with regard to the corresponding boundary phonemes (col. 9, line 33 continuing to col. 10, line 6), which reads on “sorting retrieved phoneme data based upon a prescribed attribute value and for assigning a penalty that is based on an attribute value.”

Therefore, it would have been obvious to one of ordinary skill at the time of the invention to modify the speech synthesis system of Campbell to implement assigning a value to the phoneme data based on a quality measure to rank the phoneme data based on corresponding boundary phonemes, as taught by Moebius, for the purpose of selecting phoneme data for formation of acoustic elements that achieve a reduction in concatenation discontinuities.

Campbell implements a speech unit selector that generates index information based on feature vectors and weight vectors of the phonemes that is output to the speech synthesizer at

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Figure 1, element 12 and page 40, line 22 continuing to page 43, line 21, which reads on “selecting phoneme data to be employed in synthesis of a speech waveform.”

Response to Arguments

4. Applicant's arguments with respect to claims 25-32 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

5. Claims 1-6, 8-17, and 19-24 are allowed.
6. The following is a statement of reasons for the indication of allowable subject matter:
Regarding claims 1-6, 8, 12-17, 19, and 23, the prior art of record does not specifically teach or disclose a penalty assigning means which assigns a power-related penalty in such a manner that a small penalty is assigned to phoneme data whose power is close to an average value of the power, and assigns a phoneme-duration-related penalty in such a manner that a small penalty is assigned to phoneme data whose phoneme duration is close to an average value of the phoneme duration.
7. Regarding claims 9-11, 20-22, and 24, the prior art of record does not specifically teach or disclose a counting means for grouping phoneme data on the basis of a phoneme environment, and counting the items of phoneme data on a per group basis and a second penalty assigning means for assigning a penalty on the basis of a count obtained by the

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counting means to the phoneme data retrieved by an alternate retrieval means, the second penalty being assigned in addition to a penalty assigned by a first penalty means.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela A. Armstrong whose telephone number is 703-308-6258.

The examiner can normally be reached on Monday-Thursday 7:30-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold can be reached on (703) 305-4379. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.

AAA
December 16, 2002

Marsha D Banks-Harold
MARSHA D. BANKS-HAROLD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600